
Space Weather Forecast

Issued on Monday, 27 March 2023 at 12:21 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales <https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales>

Space Weather Forecast Headline: Chance of R1 Minor radio blackouts.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low over the past 24 hours, with occasional minor common class flares recorded at GOES16. There are now nine numbered and one unnumbered sunspot regions on the visible disc. There is a spot in the southwest of the disk which remains the only magnetically complex region, with all other regions relatively small, stable and magnetically simple. No Earth-directed coronal mass ejections were observed in available coronagraph imagery.

Solar Wind / Geomagnetic Activity: The solar wind showed Earth transiting out of the negative polarity High Speed Stream from coronal hole 86. The solar wind speed fell from elevated, back down to slightly elevated. The interplanetary magnetic field was weak over the 24 hours, with the north-south component varying between weakly negative and weakly positive. The net result of the above solar wind measures was for mostly Quiet (Kp 0-2) geomagnetic activity, with a single Unsettled (Kp 3) period between 26/1800-2100 UTC.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is most likely to remain low, but with a chance of becoming Moderate with any isolated Moderate-class X-ray flares. The main region likely to give such flares is the largest and most complex in the southwest.

Solar Wind / Geomagnetic Activity: No Earth-directed coronal mass ejections feature in the forecast. The current fast wind enhancement coronal hole 86 is expected to continue easing through the period from slightly elevated to slow-ambient. The next coronal hole expected to impact Earth is 88, possibly late on day 4 (30th).

Quiet to Unsettled (Kp 0-3) geomagnetic activity is expected through the period. Later on day 4 (30th), should the fast wind from coronal hole 88 arrive, geomagnetic activity may increase to Unsettled with Active intervals and a slight chance of G1/Minor geomagnetic storms.

Energetic Particles / Solar Radiation: No solar radiation storms are expected, but there remains a slight chance of reaching S1 or greater, should any significant flares occur.

Geomagnetic Storms:

Geo-Magnetic Storm	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Minor or Moderate	G1 to G2	No	1	1	1	20
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 M Class	No	30	30	30	30
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms	Level (cm ⁻² sr ⁻¹ s ⁻¹)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = cm⁻²sr⁻¹s⁻¹)